

ured to deflect to allow the blocking feature **870** to engage and disengage with the at least a portion of the following surface **848**. In the embodiment depicted in FIG. 17, the biasing feature **872** comprises a compliant, cantilevered beam.

[0123] In some embodiments, the insertion of the connector insert **804** into the connector receptacle **802**, and specifically, the insertion of the following surface **848** into the follower receptacle **834** results in the contacting and engagement of the biasing feature **872** by the following surface **848**, which engagement deflects the biasing feature **872** and/or rotates the locking member **860** about the connector receptacle **802** as indicated by arrow **874**.

[0124] The further insertion of the connector insert **804** into the connector receptacle **802** further rotates the locking member **860** as the following surface **848** further advances into the follower receptacle **834** as shown in FIGS. 18 and 19. Although not seen in the figures, the further advancement of the connector insert **804** into the connector receptacle **802** causes mating of the contacts **822** of the connector receptacle with the insert contacts **846** of the connector insert **804**.

[0125] As seen in FIG. 19, when the connector insert **804** is fully inserted into the connector receptacle **802**, a portion of the following surface **848**, and specifically the circular cylindrical member **852** engages with the locking member **860**, and specifically with the blocking feature **870** to prevent disconnection and/or decoupling of the connector insert **804** and the connector receptacle **802**. In some embodiments, and as shown in FIG. 19, the biasing feature **872** applies a force to the portion of the following surface **848**, and specifically to the circular cylindrical member **852** to maintain engagement with the blocking feature **870**. An embodiment of the coupled connector system **800** is shown in FIG. 21.

[0126] In some embodiments, the connector insert **804** and the connector receptacle **802** can be decoupled by rotating the locking member **860** relative to the connector receptacle **802** to disengage the following surface **848**, and specifically the circular cylindrical member **852** from the blocking feature **870**. Once the following surface **848**, and specifically the circular cylindrical member **852** are disengaged from the blocking feature **870**, the connector insert **804** can be removed from the connector receptacle **802** to decouple and/or disconnect the connector insert **804** and the connector receptacle **802**.

[0127] In some embodiments, and as depicted in FIG. 20, the connector receptacle **802** can include one or several limiting features **880** that can engage with abutting features **882** of the locking member **860**. In some embodiments, the limiting features **880** and the abutting features **882** can interact to limit rotation of the locking member **860** about the connector receptacle **802**. In some embodiments, and as also depicted in FIG. 20, the locking member **860** can be coupled to the connector receptacle **802** via a thrust washer **884**, which thrust washer **884** can be polymer.

[0128] In the foregoing specification, the invention is described with reference to specific embodiments thereof, but those skilled in the art will recognize that the invention is not limited thereto. Various features and aspects of the above-described invention can be used individually or jointly. Further, the invention can be utilized in any number of environments and applications beyond those described herein without departing from the broader spirit and scope of

the specification. The specification and drawings are, accordingly, to be regarded as illustrative rather than restrictive. It will be recognized that the terms “comprising,” “including,” and “having,” as used herein, are specifically intended to be read as open-ended terms of art.

1. A medical device comprising:

a housing having an external surface defining an internal volume; and

a connector receptacle located in the housing, the connector receptacle configured to receive a connector insert, the connector receptacle comprising:

a side wall extending from the external surface of the housing into the internal volume and to a bottom of the connector receptacle, the side wall and the bottom together defining a receptacle volume having an opening proximate to the external surface of the housing;

a plurality of electrical contacts configured for mating with corresponding contacts of a connector insert when the connector insert is coupled with the connector receptacle;

an orientation feature configured to engage with at least one mating feature of the connector insert to move the connector insert to a desired alignment with respect to the connector receptacle while the connector insert is inserted into the connector receptacle.

2. The medical device of claim 1, wherein the orientation feature comprises a key extending from the side wall into the receptacle volume, wherein the key is configured to engage an alignment cam on the connector insert.

3. The medical device of claim 2, wherein the key is configured to be received within a key slot on the connector insert when the connector insert is at the desired alignment with respect to the connector receptacle and fully received within the receptacle volume.

4. The medical device of claim 3, wherein the key comprises a pointed key having a point.

5. The medical device of claim 4, wherein the point of the pointed key engages with the alignment cam when the connector insert is inserted into the connector receptacle.

6. The medical device of claim 5, wherein the plurality of electrical contacts are on the bottom of the connector receptacle.

7. The medical device of claim 6, wherein the plurality of electrical contacts are arranged in a ring on the bottom of the connector receptacle.

8. The medical device of claim 7, further comprising a seal configured to provide an environmental barrier when mating with at least a portion of the connector insert when the connector insert is received within the connector receptacle.

9. The medical device of claim 8, wherein the seal extends around the opening of the receptacle volume.

10. The medical device of claim 1, wherein the medical device comprises at least one of: a controller; an implantable blood pump; and a power source.

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33. An implantable blood pump system comprising:

an implantable blood pump;

a controller coupled to the blood pump;

a connector receptacle comprising:

a plurality of contacts;

walls defining a follower receptacle; and

a cam surface; and